Pre-service Math Educators' Receptivity to Mathematically-based Electronic Portfolios as Assessment, Reflection and Anxiety Reduction Tools

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Abstract: As a part of the course requirements for an elementary math methods course, preservice teachers develop an electronic portfolio of work completed during the semester. This portfolio consists of a word processed mathematical autobiography using *WORD*®; an original logic problem with a student-designed *EXCE*L® grid with the solution; and a student-designed brochure using a brochure template summarizing their beliefs about mathematics education. It is their perception of the effectiveness of the electronic portfolio in demonstrating their technology knowledge and ability that will be discussed during this session. Presenters will also discuss whether enrollment in a math methods class can reduce mathematical anxiety of pre-service teachers. This discussion will be based on data collected during the elementary math methods course.

INTRODUCTION

The push to reform technology education is present at both the national and state levels. In technology education the standards can be divided into broad categories such as personal use of technology and use of technology for effective instruction. Reform efforts in technology are also emphasized by the National Council of Teachers of Mathematics (NCTM) standards set by NRTR there are technology standards for mathematics education.

The NCTM recommends the use of technology and alternative assessment. Additionally the presence of math anxiety is documented in the literature. The researchers sought to integrate technology standards with the NCTM standards for assessment while being mindful of issues of mathematics anxiety among the participating students. Specific concerns about pre-service teachers and their ability to integrated technology at the elementary level coupled with state and national standards indicate a potential need for greater focus on technology integration at the early childhood level.

At a private university in the southwestern United States, researchers had an opportunity of having 66 math preservice teachers enrolled in an early childhood mathematics methods classroom. Students' experiences with technology were diverse (e.g., some of the students did not have background educational technology course while others had a basic course in educational technology.).

PURPOSE OF THE STUDY

The purpose of this research was to determine whether math preservice teachers perceive electronic portfolios to be effective assessment and reflection tools. Furthermore, the project sought to determine whether enrollment in class reduced the mathematical anxiety of pre-service teachers. The research came from a voluntary technology survey administered to students enrolled in a mathematical methods course during the Fall 2002. An abbreviated version of the Mathematical Anxiety Rating Scale (MARS) was use to determine how preservice educators perceive the effectiveness of electronic portfolios as assessment and reflection instruments. The MARS was used to measure their anxiety level concerning mathematics.

At the beginning of the Fall semester students participated in surveys that assess their attitudes and perceptions regarding electronic portfolios and mathematical anxiety in early childhood education. Over the course of the semester students developed their own portfolios. These portfolios included specific assignments that meet the goals/objectives of the class. During the last weeks of the semester, students again were administered the surveys so that the research could assess whether a change in attitude/perception occurred as a result of developing individual portfolios or participation, enrollment and attendance in the class. The portfolios were a part of their class assignments, but the surveys on which the research will be based will be strictly voluntary.

CONTENTS OF THE ELECTRONIC PORTFOLIOS

As a part of the course requirements, students developed an electronic portfolio of work completed during their math technology course. These portfolios consist of a mathematical autobiography using *PowerPoint®,* an original logic problem with a student-designed *EXCE*L® grid with the solution, and a student-designed brochure using a brochure template summarizing their beliefs about mathematics education.

In attempt to use alternative forms of assessment in elementary mathematics method class and to reduce pre-service anxiety about mathematics, we undertook this study and wanted to incorporate electronic portfolios into elementary mathematics classes.

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